

A PRESENTATION of the Regional Monitoring Program for Water Quality in the San Francisco Estuary



# The Regional Monitoring Program: A Collaborative Effort Providing Water Quality Regulators in the San Francisco Bay Area with Information They Need



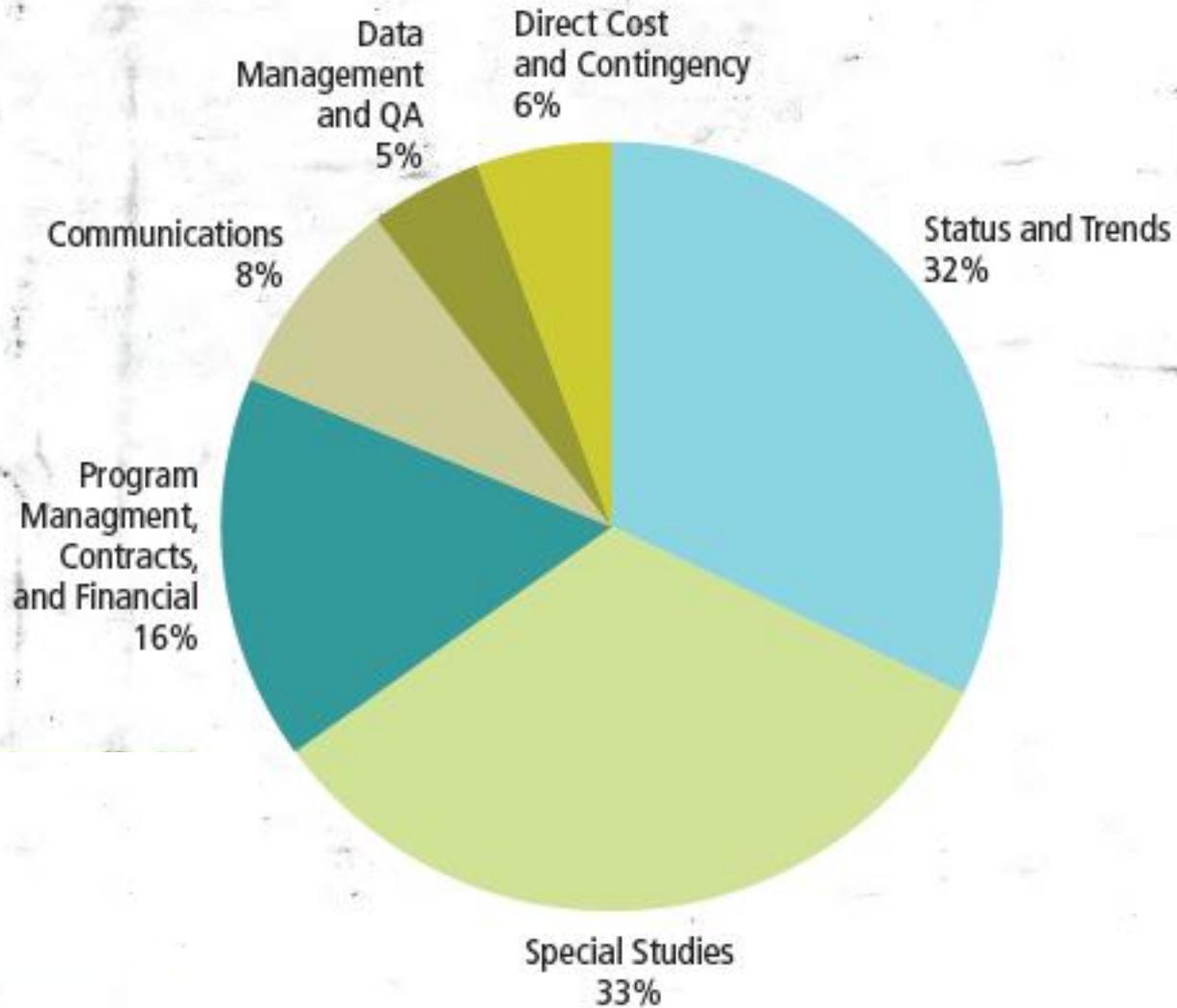
**JAY DAVIS AND MEG SEDLAK**  
**CWQMCN WEBINAR PRESENTATION**  
November 2012



- What do you do...?



## RMP Expenses: 2012





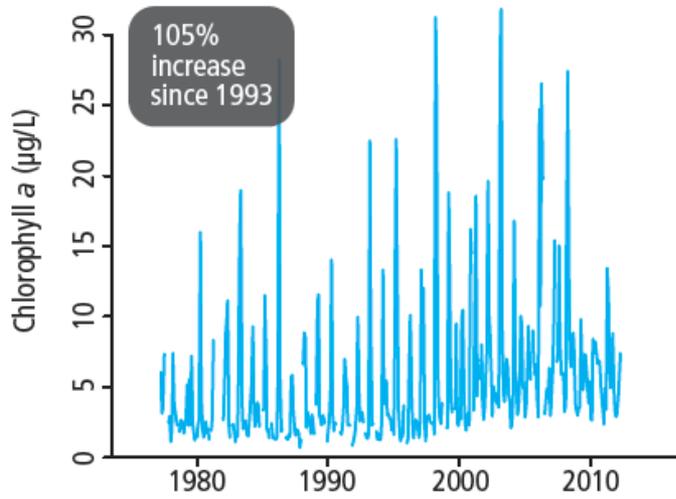
# Status & Trends: 2013

- Water - Metals at 22 sites
- Sediment – Year off
- Bivalves – Year off
- Bird eggs – Year off
- Sport Fish – 5 sites
- Basic Water Quality (USGS)
  - 36 sites; DO, SSC, Temp, and Phytoplankton
- Sediment Dynamics (USGS)
  - 6 sites

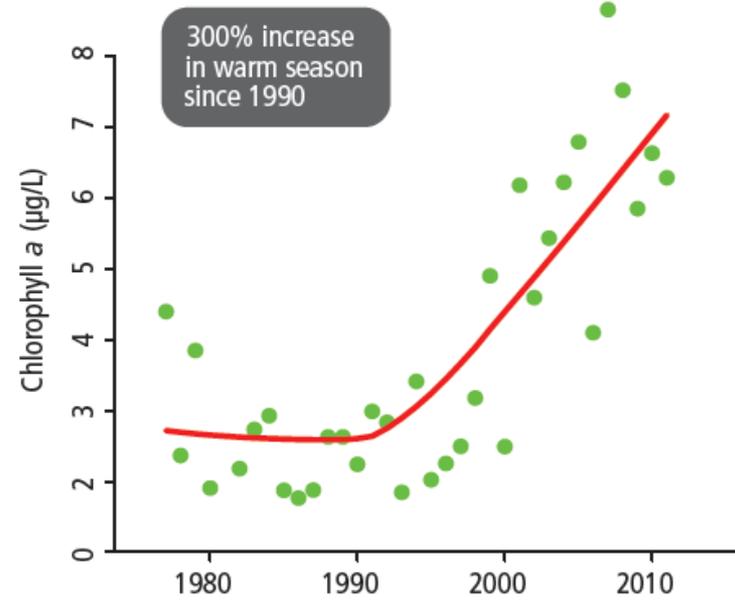




## Chlorophyll in South Bay

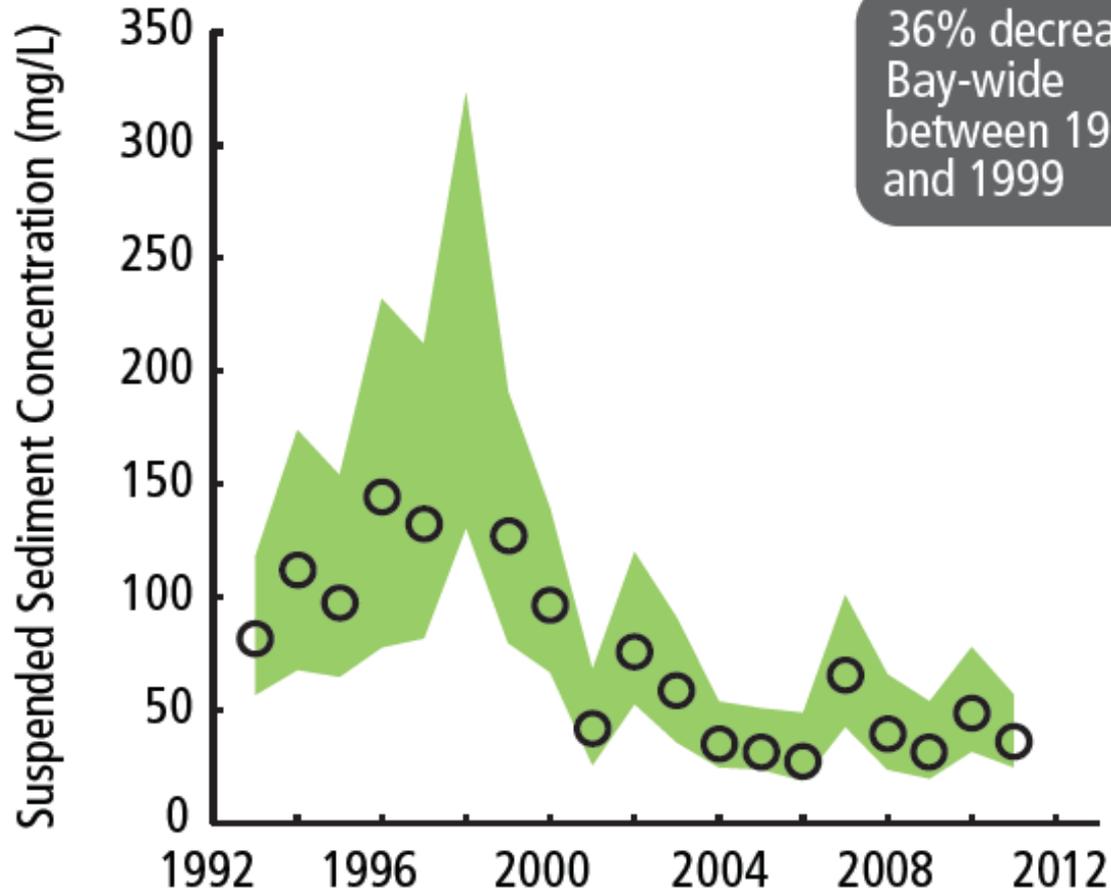


## Summer Chlorophyll in South Bay

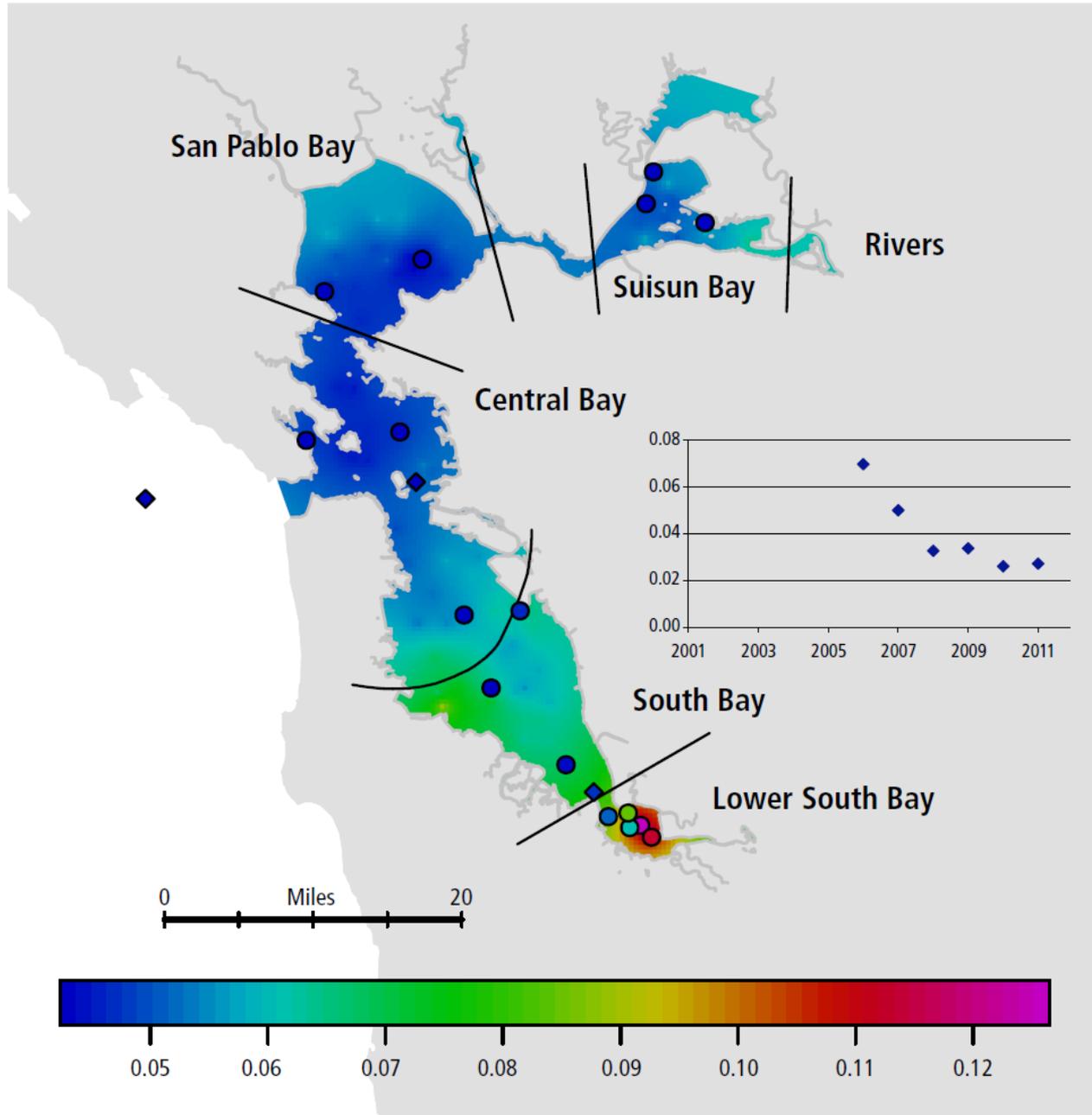




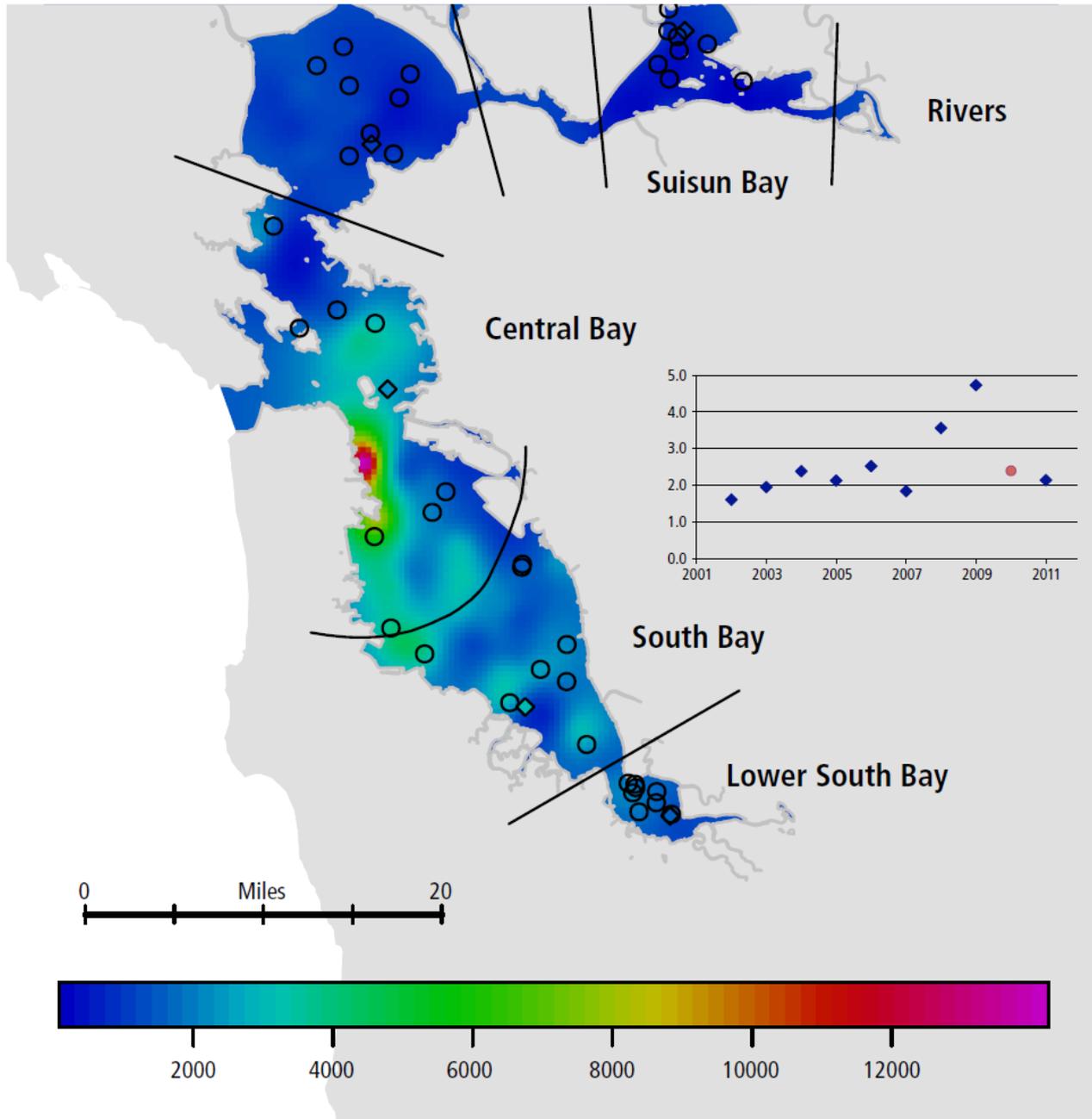
## Suspended Sediment



# Methylmercury in Water (ng/L)



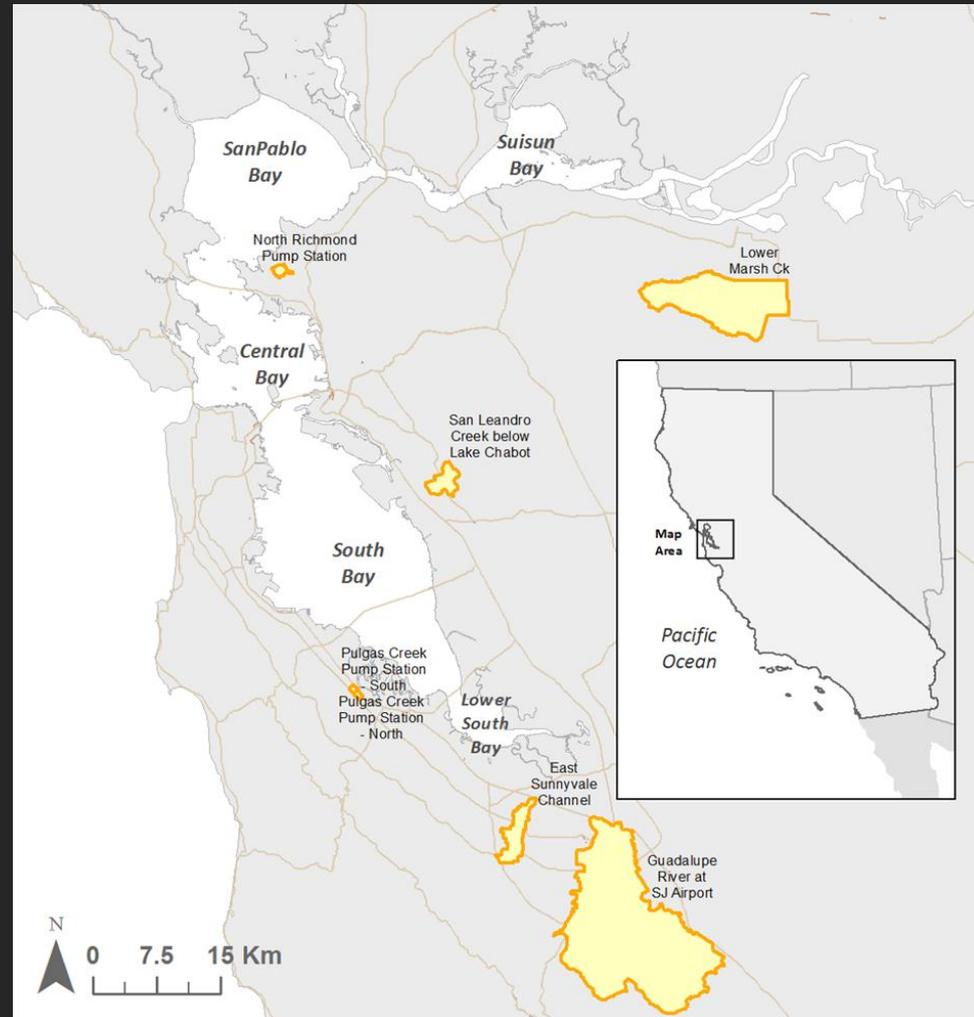
# Sum of PAHs in Sediment (ppm)



# Special Studies: Small Tributary Loading



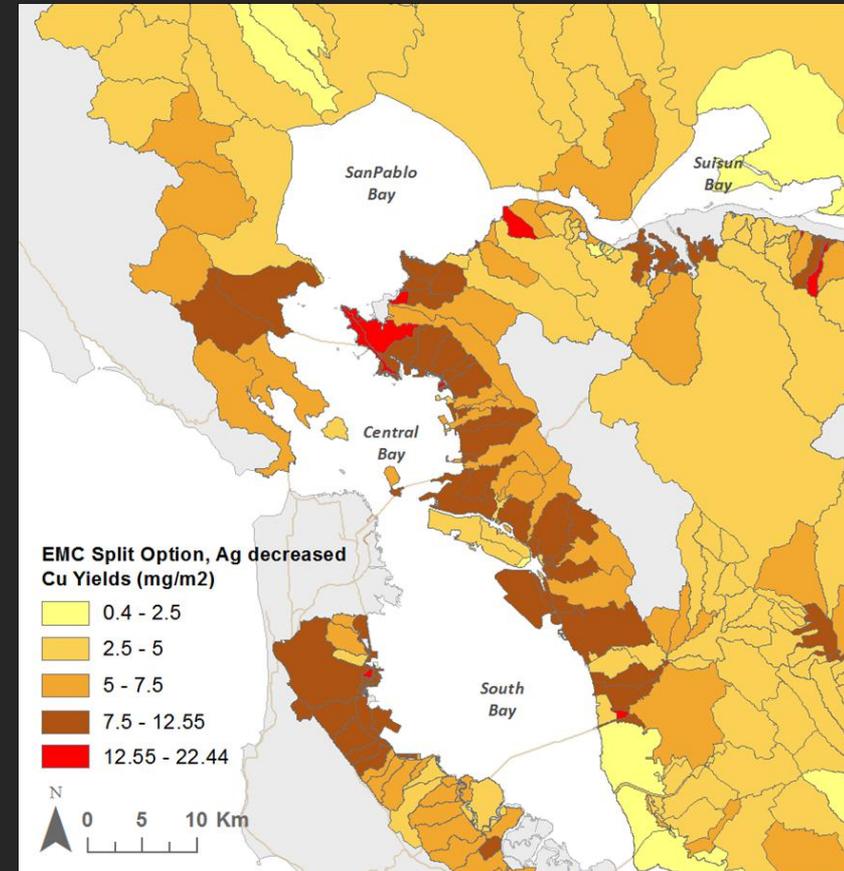
- Watershed Load Monitoring
- MRP Coordination
- 6 watersheds, 4 storms per year
  - PCBs, PAHs, PBDEs, pyrethroids, mercury, copper, selenium, suspended sediment, nitrate, toxicity



# Special Studies: Small Tributary Loading



- Regional Watershed Spreadsheet Model – Year 4
  - 2012: Copper
  - 2013: Hg and PCBs



# Special Studies: Small Tributary Loading



- Land-use and Source Area  
Specific Event Mean  
Concentrations (EMCs)



# Special Studies: Nutrients

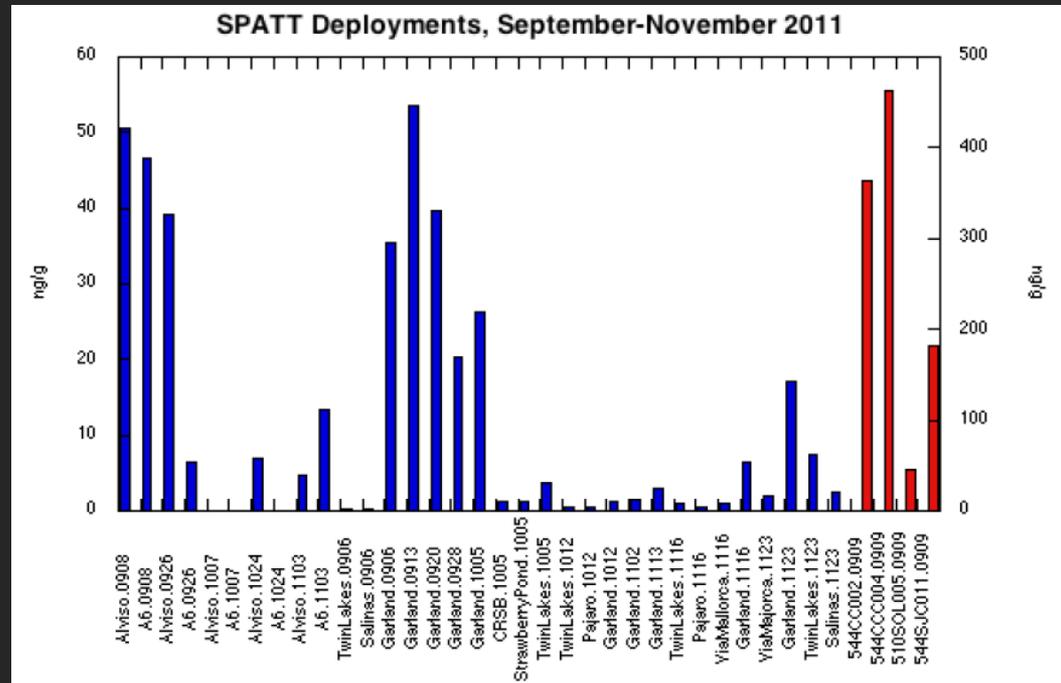
- Moored Sensors
  - Continuous monitoring CTD, DO, Chl-a, turbidity, and nitrate





# Special Studies: Nutrients

- Microcystin
- Solid Phase Adsorption Toxin Tracking (SPATT)
  - Deploy on monthly cruises and 2 fixed locations
  - Validate and calibrate





# Special Studies: Nutrients

- Stormwater Loads
  - Ammonium and total Kjeldahl nitrogen
- Nutrient Loading Summary
  - POTWs, stormwater, Delta, Golden Gate and atmospheric flux



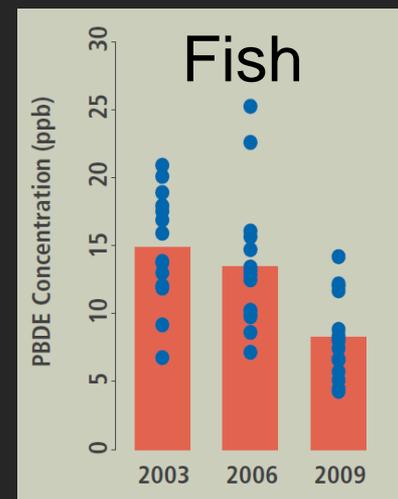
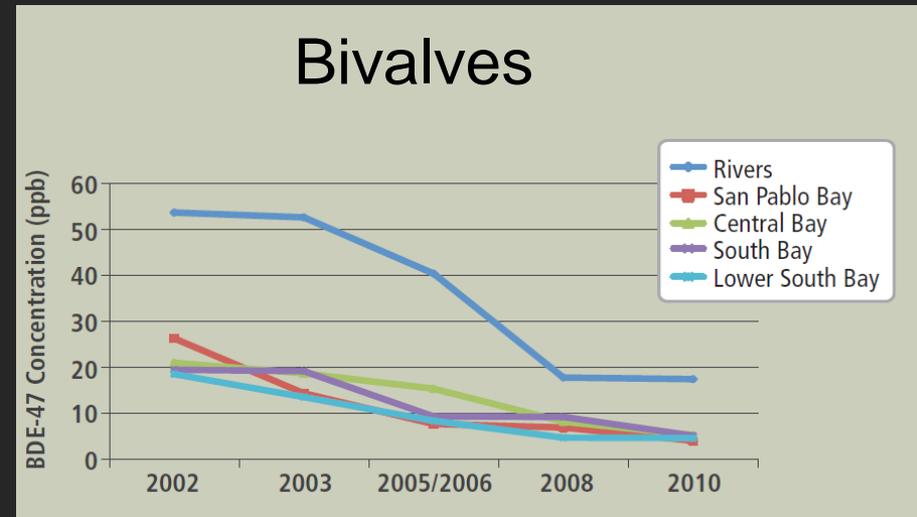
# Special Studies: Modeling

- Nutrients and contaminants
- 2012: develop tactical plan
- 2013: develop hydrodynamic and sediment transport model
  - Nutrient-phytoplankton model for Suisun and South Bay



# Special Studies: CECs

- PBDE Summary Report
- Updating the CEC Strategy
- Current Use Pesticides



# Special Studies: CECs

- Bioanalytical Tools
  - Nontargeted approach for identifying biologically active CECs

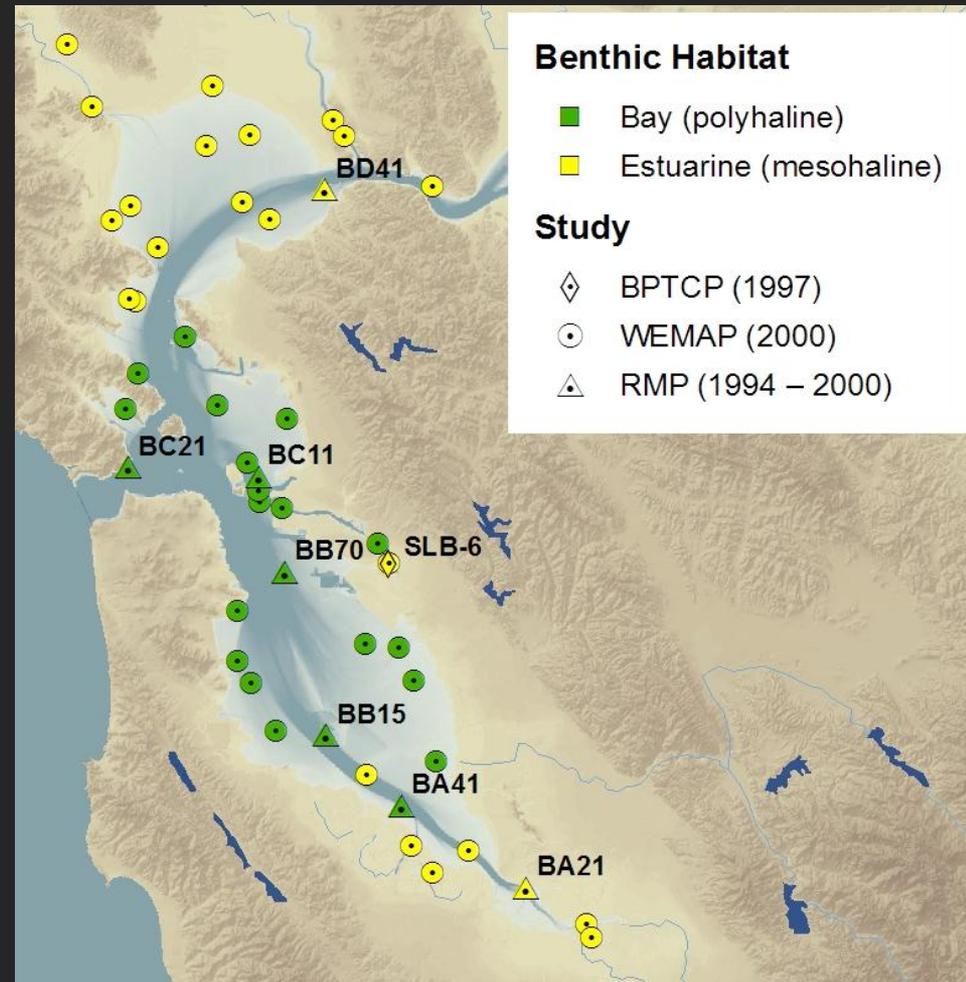


- Linking cellular responses to effects in fish
- Two year study



# Special Studies: Effects

- Developing Benthic Index for Mesohaline Habitat
  - 2-year study (2012/2013)
- Copper and Salmon Olfaction



# Communicating Information



- Pulse
- Annual Meeting
- Technical reports
- Journal articles
- Workshops
- *Estuary News* insert
- Fact sheets
- eUpdate
- Web site

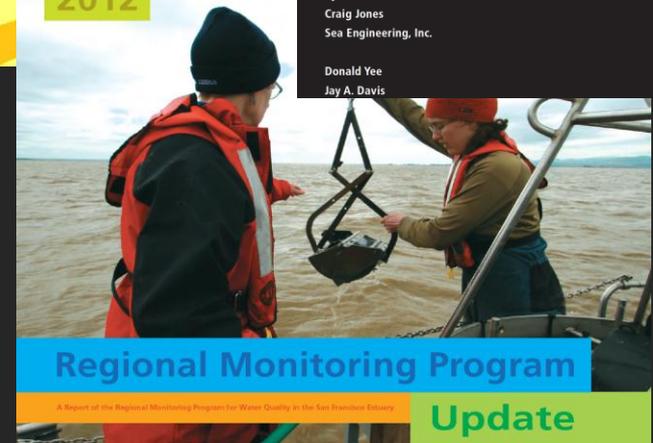


Conceptual Model of  
Contaminant Fate on the  
Margins of San Francisco Bay

Draft Report

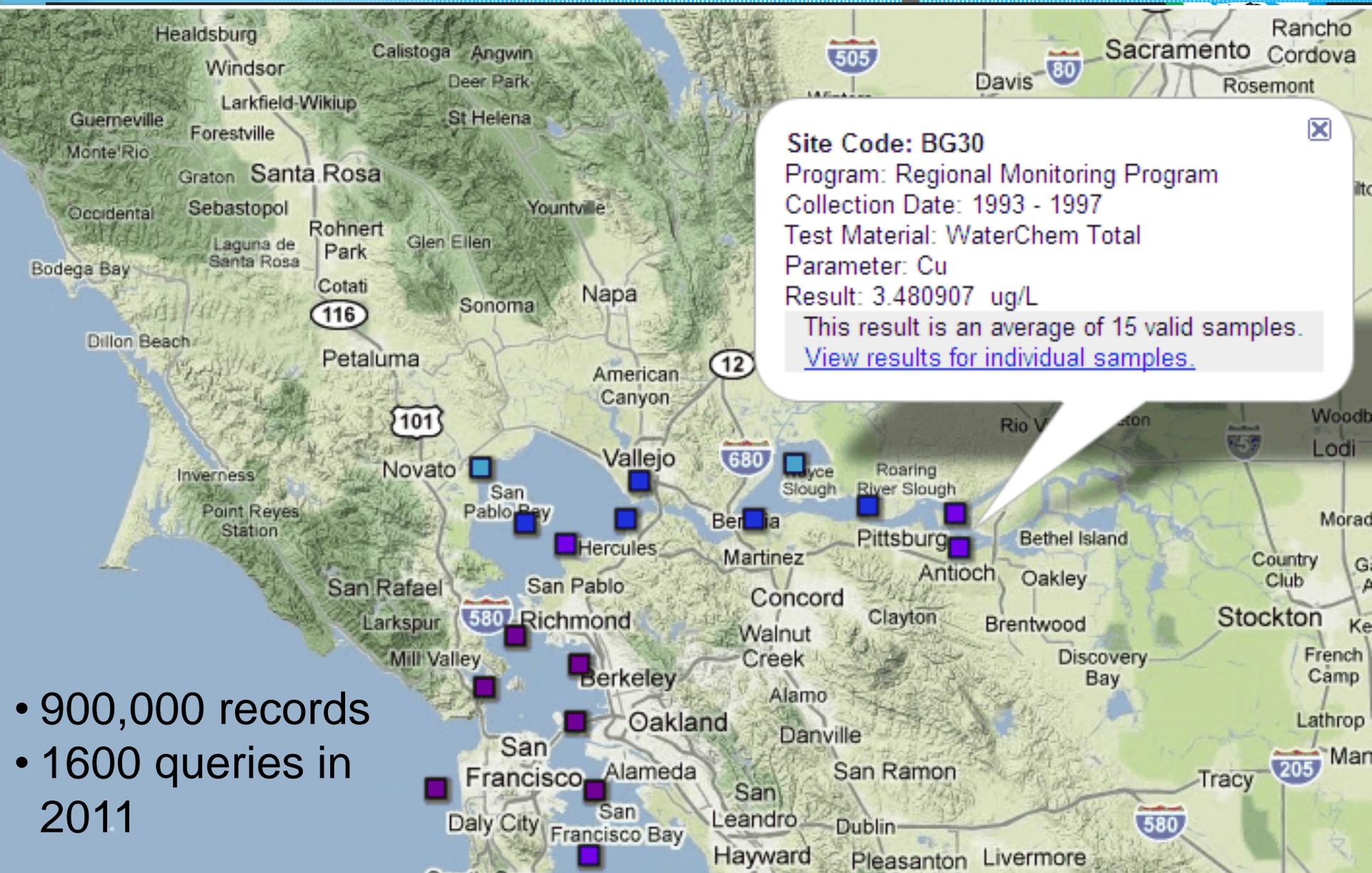
by  
Craig Jones  
Sea Engineering, Inc.

Donald Yee  
Jay A. Davis



# CD3 Contaminant Data Display & Download

water  
sediment  
bivalves sport fish



- 900,000 records
- 1600 queries in 2011



... and why do you do it?



# General Goal of the RMP

Collect data and  
communicate information  
about water quality in  
the San Francisco  
Estuary in support of  
management decisions.

# Management Questions

<b>Level 1 (Core) Questions</b> <b>Question 1</b> Levels of concern and associated impacts	<b>Question 2</b> Concentrations and masses (spatial distribution)	<b>Question 3</b> Sources, pathways, loadings, and processes	<b>Question 4</b> Increased or decreased (trends)	<b>Question 5</b> Projected concentrations, masses, and impacts
<b>Level 2 Questions</b> <b>Q1</b> Which chemicals have potential for impacts?	<b>Q1</b> Are there particular regions of concern?	<b>Q1</b> Which sources, pathways, etc. contribute most to impacts?	<b>Q1</b> Effects of management actions on concentrations and mass?	<b>Q1</b> Impacts forecast under various management scenarios?
<b>Q2</b> What is the potential for impacts due to contamination?		<b>Q2</b> Opportunities for management intervention for important pathways?	<b>Q2</b> Effects of management actions on potential for adverse impacts?	<b>Q2</b> Which contaminants predicted to increase?
<b>Q3</b> What are appropriate guidelines?		<b>Q3</b> Effects of management actions on loads and processes?		
<b>Q4</b> What contaminants are responsible for impacts?				

**Long-term  
Management  
Plans**



**Prioritized  
Management  
Questions**



**Scientific  
Knowledge**



**Enlightened  
Management  
Actions**



**A Cleaner  
San  
Francisco  
Bay**

**Groups Responsible**

Water Board  
LTMS  
BACWA  
BASMAA  
USEPA

Steering Committee  
Technical Review  
Committee  
Workgroups  
Strategy Teams  
Scientists

Technical Review  
Committee  
Workgroups  
Scientists

Regulators  
Dischargers  
The Public







- How did it come about?



# California Regional Water Quality Control Board

## San Francisco Bay Region



Linda S. Adams  
Secretary for  
Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612  
(510) 622-2300 • Fax (510) 622-2460  
<http://www.waterboards.ca.gov/sanfranciscobay>

Arnold Schwarzenegger  
Governor

### REVISED TENTATIVE ORDER NO. R2-2010-XXXX NPDES NO. CA0037702

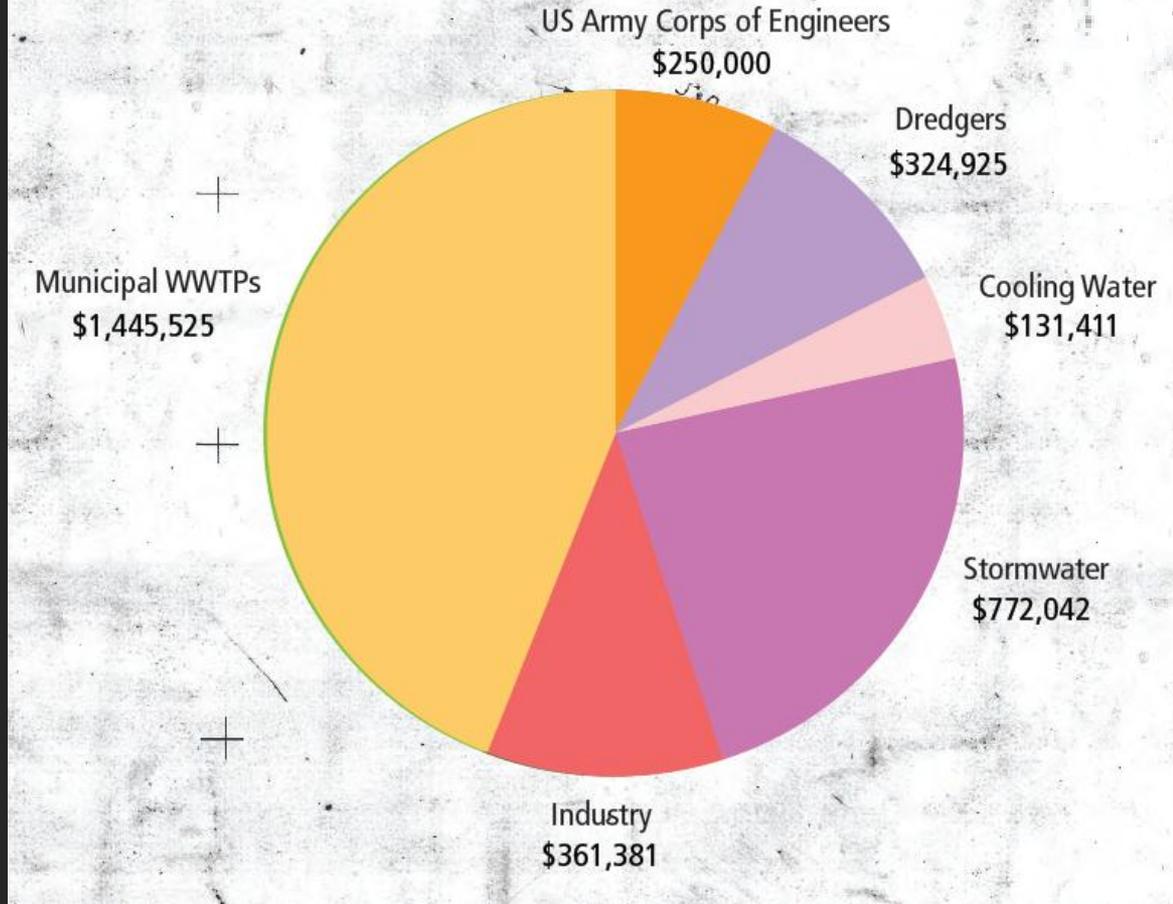
#### b. Regional Monitoring Program

On April 15, 1992, the Regional Water Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program (RMP) for the San Francisco Bay. Subsequent to a public hearing and various meetings, Regional Water Board staff requested major permit holders in this region, under authority of Section 13267 of California Water Code, to report on the water quality of the Estuary. These permit holders, including the Discharger and collectively known as the Bay Area Clean Water Agencies (BACWA), responded to this request by initiating a collaborative effort, through the San Francisco Estuary Institute (formerly the Aquatic Habitat Institute) - the San Francisco Bay Regional Monitoring Program for Trace Substances (RMP). The RMP involves collection of data for pollutants and toxicity in water, sediment, and biota of the Estuary.

The Discharger shall monitor, or cause to be monitored, ambient receiving water for the priority, toxic pollutants or continue to participate in the RMP to provide on-going characterization of water quality in the Bay. Conventional water quality parameters (pH, salinity, and hardness) shall also be sufficiently and simultaneously characterized in the receiving water at a point after the discharge has mixed with receiving water. This permit may be reopened, as appropriate, to incorporate effluent limits or other requirements based on Regional Water Board review of these data.



## RMP Fees by Sector: 2013



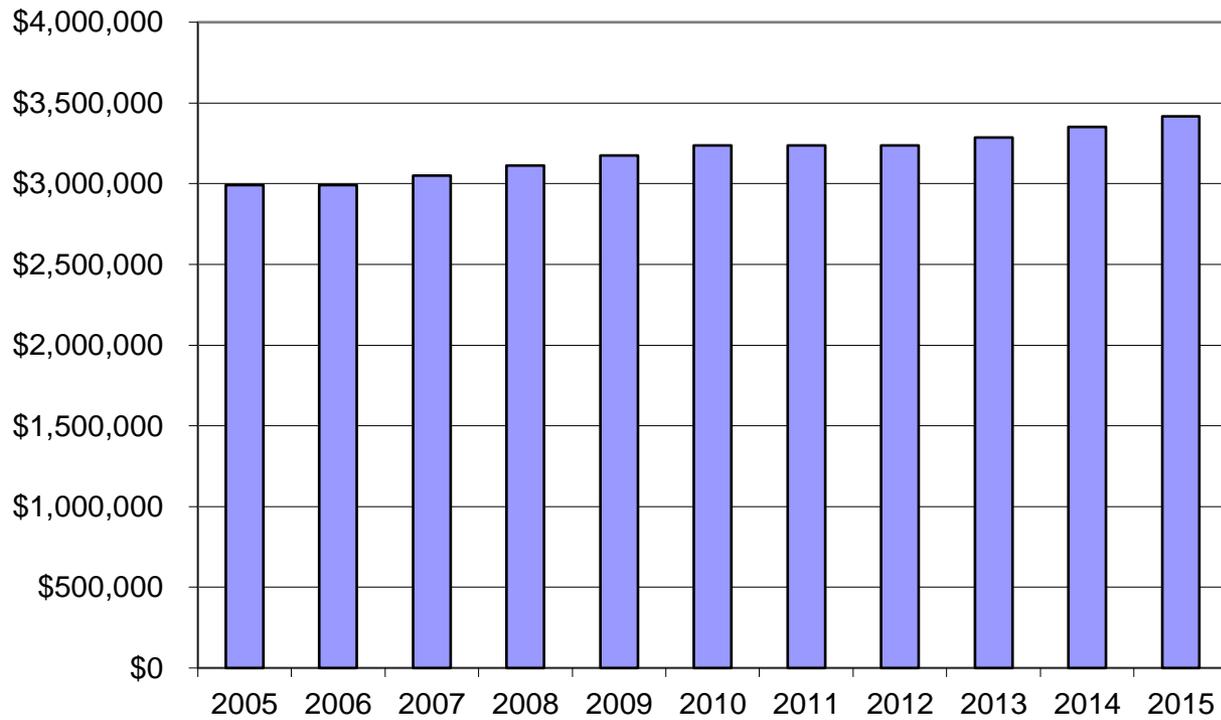
Total RMP budget 2013: \$3.3 million



- Is it working?



## RMP Fees

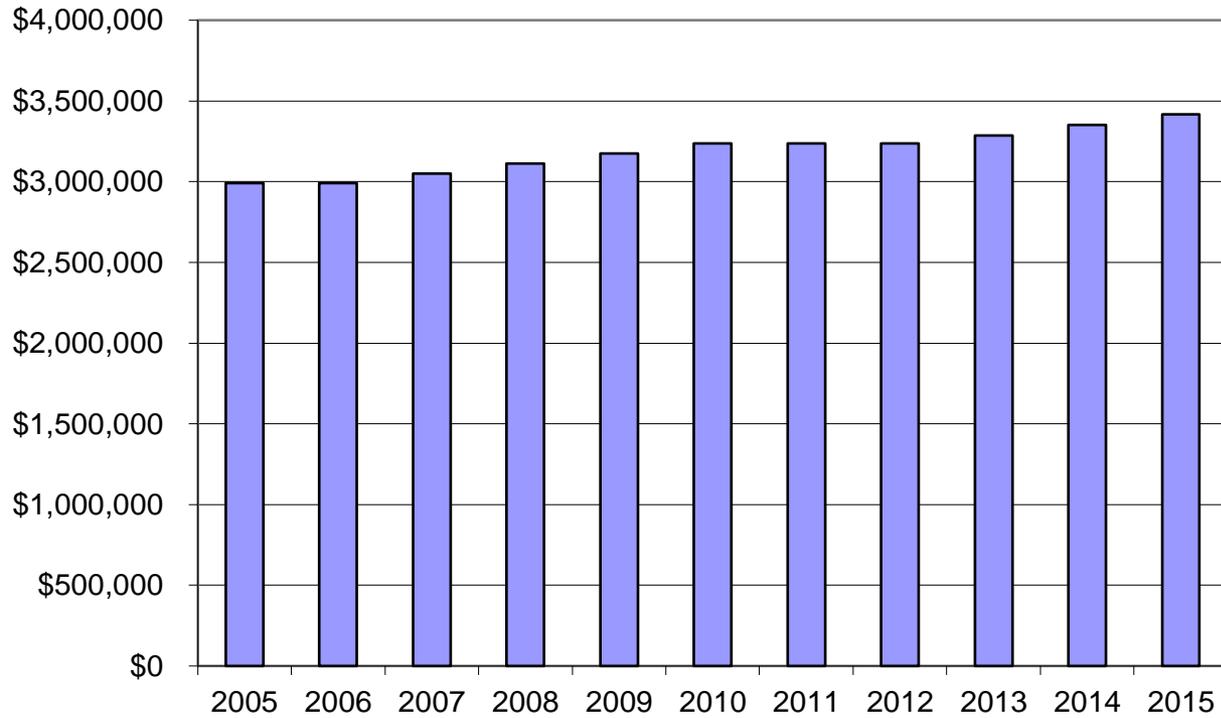




- How did you find what was needed, science wise and organizationally, to get going (how can others learn how your program selected what to monitor and why, and share data)?



### RMP Fees





# Keys to Success

- Stable funding
- Clear focus on generating useful information
- Collaboration – especially managers and scientists
- Sound science – top scientists, peer review, QA
- Adaptation – effort into planning
- Communication – so that information is used

2012



# Regional Monitoring Program

A Report of the Regional Monitoring Program for Water Quality in the San Francisco Estuary

# Update

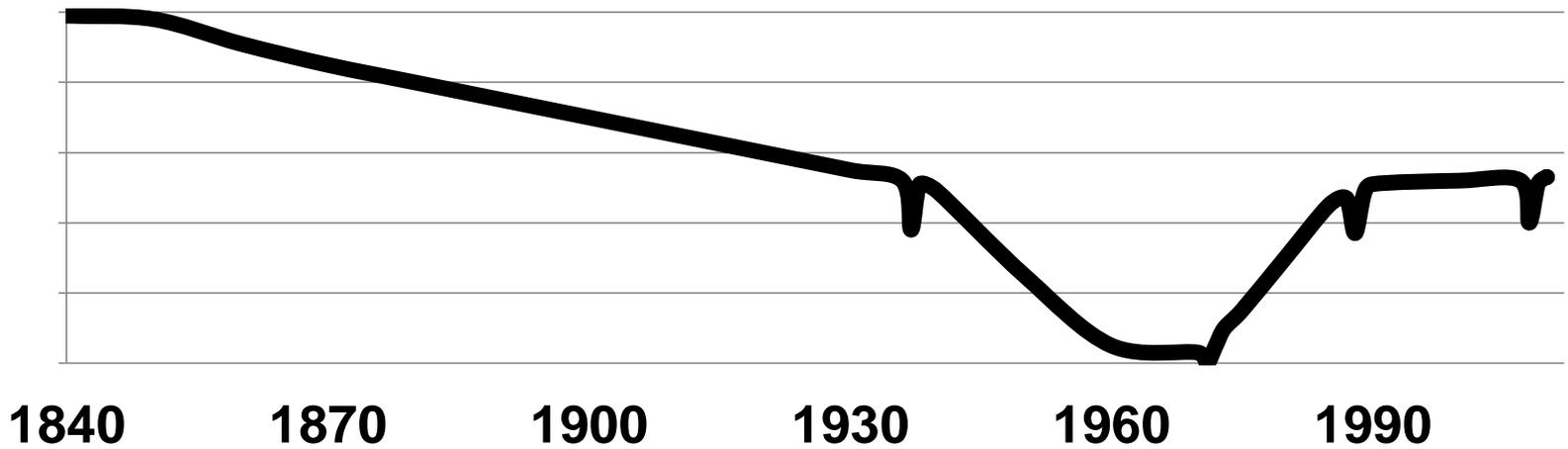


- What would you not want to do again (what should other programs avoid)?



# Regrets

- Studies that didn't pan out
- Work that is not informing decisions
- Amount of progress made in improving Bay water quality



**Diazinon**

**Copper**

**Metals**

**Suspended  
Sediment**

**Phytoplankton**

**Pyrethroids**

**PBDEs**

**Corbula**

**Cosco Busan**



- What would you like to know/ask of other monitoring programs?



- Effective approaches
  - Technical advances
  - Communication tools
  
- Always looking to improve



# Questions?

More information at  
[www.sfei.org/rmp](http://www.sfei.org/rmp)

Questions, reports, distribution  
list:  
[jay@sfei.org](mailto:jay@sfei.org)